SWEETWATER
UNION HIGH SCHOOL DISTRICT

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DATE: December 23, 2016

TO: Board of Trustees, and Dr. Karen Janney, Superintendent

FROM: Moisés G. Aguirre, Assistant Superintendent of Facilities & Operations

RE: **Construction Report Timelines**

At the May 24, 2016, meeting of the Board of Trustees, there was a request for an update regarding the length of time that reports such as geotechnical reports are valid.

In construction there are many reports required of public agencies, such as school districts. Attached is a checklist developed by the California Geological Survey (Note 48) that contains a listing of the various reports required of our district during construction projects.

In addition to these requirements, there are also Division of the State Architect (DSA) requirements. Approved design plans by the DSA have a life of three (3) years. Further, if this timeline lapses, design plans may be re-submitted so long as the appropriate fees are paid. For more information on DSA processes, here is a link to the website: http://www.dgs.ca.gov/dsa/Home.aspx

The geological reports, along with Environmental Health and Safety Reports, such as hazardous materials (Hazmat) reports, and Asbestos Hazard Emergency Response Act (AHERA), do not necessarily have a time limit.

However, if there is a significant time lapse between the issuance of the report and a particular construction project, it is suggested by staff that a specialist provide an update to the reports regarding findings since there is a constant change in state requirements and updates to building codes and regulations. This would assume there is no change in environmental and/or material changes to the soil or the building structure.

Reports may include Master Plan Updating, since the revision of these plans would allow for revisions due to funding timelines (e.g. associated with state bond funding), educational program changes, and/or changes to the use of technology in a way that impact facility needs.

In conclusion, design plans approved by the DSA have a timeline of three years. Additional reports do not fall under a particularly set timeline, however, it is prudent to update other reports, such as geotechnical reports to reflect other changes that may have occurred between time of issuing the report, and construction.

As a side note, staff is anticipating that current stormwater regulations will likely create a new mandate for percolation testing for school site improvements, thus adding an additional report that staff will likely need to conduct on future projects.

If you have any questions, please feel free to contact me at: moises.aguirre@sweetwaterschools.org.

California Geological Survey - Note 48

Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings
October 2013

Note 48 is used by the California Geological Survey (CGS) to review the geology, seismology, and geologic hazards evaluated in reports that are prepared under California Code of Regulations (CCR), Title 24, California Building Code (2013 CBC). CCR Title 24 applies to California Public Schools, Hospitals, Skilled Nursing Facilities, and Essential Services Buildings. The Building Official for public schools is the Division of the State Architect (DSA). Hospitals and Skilled Nursing Facilities in California are under the jurisdiction of the Office of Statewide Health Planning & Development (OSHPD). The California Geological Survey serves as an advisor under contract with these two state agencies.

Project Name: _____ Location: _____

OSHPD or DSA File #: _____ Reviewed By: _____

Date Reviewed: _____ California Certified Engineering Geologist #: _____

Checklist Item or Topic Within Consulting Report NA = not applicable NR = not addressed by consultant and therefore not reviewed at this time	Adequately Described; Satisfactory	Additional Information Needed
Project Location		
1. Site Location Map, Street Address, County Name: Correctly plot site on a 7½-minute USGS quadrangle base-map.		
2. Plot Plan with Exploration Data and Building Footprint: One boring or exploration shaft per 5000 ft^2, with minimum of two for any one building. Exploratory trench locations.		
3. Site Coordinates: Latitude & Longitude		
Engineering Geology/Site Characterization		
4. Regional Geology and Regional Fault Maps: Concise page-sized illustrations with site plotted.		
5. Geologic Map of Site: Detailed (large-scale) geologic map with proper symbols and geologic legend.		
6. Subsurface Geology: Engineering geologic description summarized from boreholes or trench logs. Summarize ground water conditions.		
7. Geologic Cross Sections: Two or more detailed geologic sections with pertinent foundations and site grading.		
8. Active Faulting & Coseismic Deformation Across Site: Show proposed structures in relation to Alquist-Priolo Earthquake Fault Zones and/or any potential fault rupture hazard identified from the Safety Element of the local agency (city or county); show location of fault investigation trenches, 50-foot setbacks perpendicular from fault plane and proposed building footprints.		
9. Geologic Hazard Zones (Liquefaction & Landslides): *(If applicable)* Show proposed structures in relation to CGS official map showing zones of required investigation for liquefaction and landslide, and/or any pertinent geologic hazard map from the Safety Element of the local agency (city or county).		
10. Geotechnical Testing of Representative Samples: Broad suite of appropriate geotechnical tests.		
11. Consideration of Geology in Geotechnical Engineering Recommendations: Discuss engineering geologic aspects of excavation/grading/fill activities, foundation and support of structures. Include geologic and geotechnical inspections and problems anticipated during grading. Special design and construction provisions for bearing capacity failure and/or footings or foundations founded on weak or expansive soils. Consideration of seismic compression of fills; cut/fill differential settlement.		
Seismology & Calculation of Earthquake Ground Motion		
12. Evaluation of Historical Seismicity: Prepare a short description of how historical earthquakes have affected the site.		
13. Classify the Geologic Subgrade (Site Class): ASCE 7, Chapter 20.		
14. General Procedure Ground Motion Analysis: Follows CBC §1613A.5. Report parameters S_S, S_1, S_{DS} and S_{D1}. Recommended method for establishing map values found at: http://geohazards.usgs.gov/designmaps/us/application.php.		
15. Seismic Design Category: Report if $S_1 > 0.75$		
16. Site-Specific Ground Motion Analysis: *(If applicable)* Required where Seismic Design Category is E or F (CBC §1616A.1.3), and where required by ASCE 7 §11.4.7. See requirements in CBC §1803A.6. CGS suggests a table showing: (a) 2%-in-50-years probabilistic spectrum, (b) risk coefficients (if using ASCE 7 §21.2.1.1, Method 1), (c) probabilistic MCE_R, (d) 84% deterministic spectrum, (e) deterministic lower limit, (f) site-specific MCE_R, (ASCE 7 §21.2.3), (g) 80% of map-based General Response Spectrum, (h) design response spectrum (ASCE 7 §21.3). Also provide S_{DS} and S_{D1} values per ASCE 7 §21.4.		

Checklist Item or Topic Within Consulting Report NA = not applicable NR = not addressed by consultant and therefore not reviewed at this time	Adequately Described; Satisfactory	Additional Information Needed
17. **Deaggregated Seismic Source Parameters:** (*If applicable*) If needed for liquefaction, slope stability analysis or for earthquake record selection, provide controlling magnitude (M) and fault distance (R). Might be either deterministic or deaggregate for modal M and R.		
18. **Time Histories of Earthquake Ground Motion:** (*If applicable*) Identify target spectra (MCE or design); justify selected earthquake records; scale to target to meet ASCE 7 §16.1.3 or §17.3 and CBC §1616A.1.32; and show initial and scaled time histories and response spectra.		

Liquefaction/Seismic Settlement Analysis

19. **Geologic Setting for Occurrence of Liquefaction:** Perform screening analysis to identify where the following conditions apply: ♦ depth of highest historical ground water surface <50 ft. ♦ low-density, non-plastic alluvium, typically *SPT* $(N_1)_{60}$<30.		
20. **Seismic Settlement Calculations:** (*If applicable*) Evaluate both saturated and unsaturated layers of the entire soil column, based on several detailed geologic cross sections. Provide calculations (no estimates), including all input parameters. Evaluate liquefaction using highest historical ground water elevation. Evaluate using PGA_M (CBC §1803A.5.12), and calculate liquefaction settlement for each layer where FS<1.3 (CGS SP117A).		
21. **Other Liquefaction Effects:** (*If applicable*) Bearing capacity failure and/or lateral spread.		
22. **Mitigation Options for Liquefaction:** (*If applicable*) Discuss effectiveness of options to mitigate liquefaction effects. Acceptance criteria for ground-improvement schemes.		

Slope Stability Analysis

23. **Geologic Setting for Occurrence of Landslides:** Characterize the potential for landsliding both on and off-site affecting proposed project.		
24. **Determination of Static And Dynamic Strength Parameters:** (*If applicable*) Conduct appropriate laboratory tests to determine material strength for both static and dynamic conditions.		
25. **Determination of Pseudo-Static Coefficient (Keq):** (*If applicable*) Recommended procedure available from http://www.conservation.ca.gov/cgs/shzp/webdocs/Documents/sp117.pdf. Recommend using design-level ground motion based on geometric mean and without risk coefficient (ie, $(PGA_M)/1.5$), or discuss with CGS.		
26. **Identify Critical Slip Surfaces for Static and Dynamic Analyses:** (*If applicable*) Failure surfaces should be modeled to include existing slip surfaces, discontinuities, geologic structure and stratigraphy; include appropriate ground water conditions.		
27. **Dynamic Site Conditions:** (*If applicable*) Site response analysis and topographic effects should be considered, if appropriate.		
28. **Mitigation Options for Landsliding/Other Slope Failure:** (*If applicable*) Discuss effectiveness of options to mitigate landsliding/slope failure effects. Acceptance criteria for ground-improvement schemes.		

Other Geologic Hazards or Adverse Site Conditions

These exceptional geologic hazards do not occur statewide; however, they may be pertinent to a particular site. Where these conditions exist relevant information should be communicated to the design team.

29. **Expansive Soils**		
30. **Corrosive/Reactive Geochemistry of Geologic Subgrade:** soluble sulfates and corrosive soils.		
31. **Conditional Geologic Assessment:** Including but not limited to - **A. Hazardous materials** methane gas, hydrogen-sulfide gas, tar seeps; **B. Volcanic eruption**; **C. Flooding** Riverine (FEMA FIRMs or local zoning for 100-year flood); see CBC §1612A. Also consider alluvial fan & dam inundation. Is the site elevated or protected from the hazard; **D. Tsunami and seiche inundation**; **E. Radon-222 gas**; **F. Naturally occurring asbestos** in geologic formations associated with serpentine; refer to CGS SP 124; **G. Hydrocollapse** of alluvial fan soils due to anthropic use of water; **H. Regional subsidence**; **I. Clays and cyclic softening**.		

Report Documentation

32. **Geology, Seismology, and Geotechnical References**		
33. **Certified Engineering Geologist:** (CBC §1803A.1)		
34. **Registered Geotechnical Engineer:** (CBC §1803A.1)		